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Notice of Allowability	Application No.	Applicant(s)	
	10/802,081	OLSTAD ET AL.	
	Examiner	Art Unit	
	Meagan S. Walling	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/15/04 application.
2. ☒ The allowed claim(s) is/are 1-11.
3. ☒ The drawings filed on 15 March 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

Allowable Subject Matter

Claims 1-11 are allowed.

The following is an examiner's statement of reasons for allowance:

The primary reason for the allowance of claim 1 is the inclusion of the limitation of a compass sensor module having: waterproof housing; mounting mechanism on the housing to engage a headgear worn by an operator; two-axis gimbal mechanism inside the waterproof housing, the two-axis gimbal mechanism having a protective housing connected to the waterproof housing, the protective housing containing ring structure and two orthogonal axis structures; a magnetic field sensor unit mounted on one the axis structures, the magnetic field sensor module providing magnetic field data signals representative the direction faced by the operatorz mechanism transmits horizontal yawing operator to the gimbal mechanism and field sensor unit; and the mounting motions of the magnetic processor electronics section connected to the magnetic field sensor unit providing data signals representative of azimuth from the magnetic field data signals; and a data transmission module having: an electrically insulated conductor connected to the compass sensor module; an amplifier stage connected to the insulated conductor for amplifying the azimuth data signals; an electrically insulated cable extending from the amplifier stage for remotely transmitting the azimuth signals thereon; and a transceiver/display console at a remote location connected to the cable to receive and display the remotely transmitted azimuth data signals.

The primary reason for the allowance of claim 9 is the inclusion of the limitation of means for providing a waterproof housing; means for engaging a headgear worn by an operator,

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the engaging means being mounted on the waterproof housing providing means; means for securing a two-axis gimbal mechanism inside the waterproof housing providing means, the two-axis gimbal mechanism creating means having a protective housing connected to the waterproof housing providing means, the protective housing containing ring structure and two orthogonal axis structures; means for sensing magnetic fields mounted on one of the axis structures, the magnetic field sensing means providing magnetic field data signals representative of the direction faced by the operator; means for processing data having a processor electronics section connected to the magnetic field sensing means providing data signals representative of azimuth from the magnetic field data signals; means for providing an electrically insulated conductor being connected to the processing data means; means connected to the insulated conductor means for amplifying an electromagnetic form of the azimuth data signals; means extending from the amplifying means for remotely transmitting the electromagnetic azimuth data signals on an insulated cable; and means coupled to the insulated cable receiving and displaying the remotely transmitted electromagnetic azimuth data signals at a remote location.

The primary reason for the allowance of claim 11 is the inclusion of the limitation of direction faced by a diver in water comprising the steps of: providing a compass sensor module having engaging a headgear worn by an diver by a waterproof housing; mounting mechanism on the waterproof housing to position the compass sensor module on the back of the head of the diver; securing a two-axis gimbal mechanism inside the waterproof compass sensor module, the two-axis gimbal housing mechanism having a protective housing connected to the waterproof housing, the protective housing containing ring structure and two orthogonal axis structures; sensing magnetic the diver fields representative the direction faced by unit mounted on one of

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magnetic field sensor the axis structures, the magnetic field sensor unit providing magnetic field data signals representative the direction faced by the diver; providing azimuth data signals from the magnetic field data signals a sensor module; processor electronics section in the compass coupling the azimuth data signals over a conductor to an amplifier stage of a data transmission module; transmitting the azimuth data signals as electromagnetic signals on an insulated cable of the data transmission module to a surface craft at a remote location; transmitting the azimuth data signals as acoustic signals through the water; and displaying the transmitted azimuth data signals at the remote location on a console.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Foxlin (US 6,162,191) teaches a self-contained sensor apparatus that generates a signal that corresponds to at least two of the three orientational aspects of yaw, pitch, and roll of a human-scale body relative to an external reference frame.

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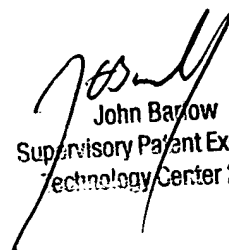
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meagan S. Walling whose telephone number is (571) 272-2283.

The examiner can normally be reached on Monday through Friday 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

msw


John Barlow
Supervisory Patent Examiner
Technology Center 2800